CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.08/BBU/WMM/Gradation/2016-17 27.12.2016

TEST REPORT ON GRADATION OF WET MIX MACADAM

*** Customer**	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
*** Agency**	:	**Mr. B.B. Umesh,** #385, Bettahalasur (P), Bangalore North Taluk.
*** Name of Work**	:	Patching potholes in main and cross roads of Kodigehalli Tatanagara Bhadrappa Layout, Devinagara, Lottegollahalli, Muneshwaranagara and surrounding areas in Ward No.08, BBMP, Bangalore.
*** Reference**	:	BBMP/EE/BTP/WO/ /2016-17
Sample ID	:	Wet Mix Macadam
Technical Reference	:	IS 2386 (part-1)1963 (RA-2016)
Date of Testing	:	27.12.2016

Civil-Tech Consultants & Engineers Civil Engineering Testing Laboratory

Oven Dry Wt (gm): **5000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits As per Morth Table 400-11
53	0	0	0	100	100
45	100	100	2.0	98.0	95-100
22.4	1660	1760	35.20	64.80	60-80
11.2	1095	2855	57.10	42.90	40-60
4.75	650	3505	70.10	29.90	25-40
2.36	615	4120	82.40	17.60	15-30
0.600	400	4520	90.40	9.60	8-22
0.075	320	4840	96.80	3.20	0-8

*Information is furnished by the Customer/Representative.

AEE A.E.E.

Civil-Tech Consultants & Engineers Bangalore

Note:

⇒The report shall not be reproduced, except in full, without the written approval of the laboratory.

⇒The results indicated above are based on the tests carried out on the samples received in the laboratory.

⇒Any Query regarding the report must be reported within 30 days from the date of testing.

****

Civil-tech Consultants & Engineers
#23/14, 7th Cross, 3rd Stage, 4th Block,
Shakthi Ganapathinagar,
Basaveshwaranagar, Bangalore-560 079.

#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagar, Bangalore-79.
Tele Fax : 23223227, Website : www.civiltechconsultants.com
E-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.08/BBU/WMM/AIV/2016-17 27.12.2016

TEST REPORT ON IMPACT VALUE OF AGGREGATE

* Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. B.B. Umesh,** #385, Bettahalasur (P), Bangalore North Taluk.
* Name of Work	:	Patching potholes in main and cross roads of Kodigehalli Tatanagara Bhadrappa Layout, Devinagara, Lottegollahalli, Muneshwaranagara and surrounding areas in Ward No.08, BBMP, Bangalore.
* Reference	:	BBMP/EE/BTP/WO/ /2016-17
* Sample ID	:	Wet Mix Macadam
Technical Reference	:	IS: 2386 Part IV
Date of Testing	:	27.12.2016

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	389	392	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	79	82	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	310	310	
4	Aggregate Impact value = percent fines 100* (W2/W1)%	20.31	20.92	**20.61**

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Aggregate Impact value for Wet Mix Macadam is 30%

Note:

⇒The report shall not be reproduced, except in full, without the written approval of the laboratory.

⇒The results indicated above are based on the tests carried out on the samples received in the laboratory.

⇒Any Query regarding the report must be reported within 30 days from the date of testing.

Civil-tech Consultants & Engineers, Bangalore

Civil-tech Consultants & Engineers
#23/14, 7th Cross 3rd Stage, 4th Block,
Shakthi Ganapathinagar,
Basaveshwaranagar, Bangalore-560 079.

A.E.E.

****

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.08/BBU/WMM/Shape.T/2016-17 27.12.2016

TEST REPORT ON FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

* **Customer**	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* **Agency**	:	**Mr. B.B. Umesh,** #385, Bettahalasur (P), Bangalore North Taluk.
* **Name of Work**	:	Patching potholes in main and cross roads of Kodigehalli Tatanagara Bhadrappa Layout, Devinagara, Lottegollahalli, Muneshwaranagara and surrounding areas in Ward No.08, BBMP, Bangalore.
* **Reference**	:	BBMP/EE/BTP/WO/ /2016-17
* **Sample ID**	:	Wet Mix Macadam
Technical Reference	:	IS 2386(Part 1) 1963 (RA 2016)
Date of Testing	:	27.12.2016

Sl.No.	Description	Result
1	Flakiness Index	11.36%
2	Elongation Index	13.98%
3	Combined Flakiness & Elongation Index	25.34%

*Information is furnished by the Customer/Representative.

Civil-Tech Consultants & Engineers Bangalore

Comments:

→ Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

Note:

⇒The report shall not be reproduced, except in full, without the written approval of the laboratory.

⇒The results indicated above are based on the tests carried out on the samples received in the laboratory

⇒Any Query regarding the report must be reported within 30 days from the date of testing.

A/c W-8

A.E.E.

****

Civil-tech Consultants & Engineers
#23/14, 7th Cross 3rd Stage 4th Block,
Shakthi Ganapathinagar,
Basaveshwaranagar, Bangalore-560 079.

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.08/BBU/BC/AIV/2016-17 29.12.2016

TEST REPORT ON IMPACT VALUE OF AGGREGATES

*** Customer**	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
*** Agency**	:	**Mr. B.B. Umesh,** #385, Bettahalasur (P), Bangalore North Taluk.
*** Name of Work**	:	Patching potholes in main and cross roads of Kodigehalli Tatanagara Bhadrappa Layout, Devinagara, Lottegollahalli, Muneshwaranagara and surrounding areas in Ward No.08, BBMP, Bangalore.
*** Reference**	:	BBMP/EE/BTP/WO/ /2016-17
*** Sample ID**	:	Hot mix plant, Bangalore.
*** Type of Mix**	:	Bituminous Concrete
Technical Reference	:	IS: 2386 (Part- 4)-1963 (RA-2016)
Date of Testing	:	29.12.2016

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	390	393	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	305	307	
4	Aggregate Impact value = percent fines 100* (W2/W1) percent	21.79	21.88	**21.84**

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

Note:

⇒The report shall not be reproduced, except in full, without the written approval of the laboratory.

⇒The results indicated above are based on the tests carried out on the samples received in the laboratory.

⇒Any Query regarding the report must be reported within 30 days from the date of testing.

A.E.E.

****

Civil-tech Consultants & Engineers
#23/14, 7th Cross, 3rd Stage, 4th Block,
Shakthi Ganapathinagar,
Basaveshwaranagar, Bangalore-560 079.

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.08/BBU/BC/Shape.T/2016-17 29.12.2016

TEST REPORT ON FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. B.B. Umesh,** #385, Bettahalasur (P), Bangalore North Taluk.
* Name of Work	:	Patching potholes in main and cross roads of Kodigehalli Tatanagara Bhadrappa Layout, Devinagara, Lottegollahalli, Muneshwaranagara and surrounding areas in Ward No.08, BBMP, Bangalore.
* Reference	:	BBMP/EE/BTP/WO/ /2016-17
* Sample ID	:	Hot mix plant, Bangalore
Technical Reference	:	IS 2386 (Part 1) 1963 (RA 2016)
* Type of Mix	:	Bituminous Concrete
Date of Testing	:	29.12.2016

Sl.No.	Description	Result
1	Flakiness Index	11.25%
2	Elongation Index	13.25%
3	Combined Flakiness & Elongation Index	24.50%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Flakiness & Elongation Index for Bituminous Concrete is 30%

Note:

⇒The report shall not be reproduced, except in full, without the written approval of the laboratory.

⇒The results indicated above are based on the tests carried out on the samples received in the laboratory.

⇒Any Query regarding the report must be reported within 30 days from the date of testing.

A.E.E.

****

Civil-tech Consultants & Engineers
#23/14, 7th Cross 3rd Stage 4th Block,
Shakthi Ganapathinagar,
Basaveshwaranagar, Bangalore-560 079.

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/W.No.08/BBU/BC/Stripping/2016-17 29.12.2016

TEST REPORT ON STRIPPING VALUEOF ROAD AGGREGATES (STATIC IMMERSION TEST)

*** Customer**	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
*** Agency**	:	**Mr. B.B. Umesh,** #385, Bettahalasur (P), Bangalore North Taluk.
*** Name of Work**	:	Patching potholes in main and cross roads of Kodigehalli Tatanagara Bhadrappa Layout, Devinagara, Lottegollahalli, Muneshwaranagara and surrounding areas in Ward No.08, BBMP, Bangalore.
*** Reference**	:	BBMP/EE/BTP/WO/ /2016-17
Technical Reference	:	IS: 6241
*** Type of Mix**	:	Bituminous Concrete
Date of Testing	:	29.12.2016

Type of binder : 60/70
Percentage of binder used : 5.00% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.00 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.2	3.43	96.57
2	3.5		
3	3.6		

*Information is furnished by the Customer/Representative.

Comments:

→ Minimum allowable Aggregate retained coating for Bituminous Concrete is 95%

Note:

⇒The report shall not be reproduced, except in full, without the written approval of the laboratory.

⇒The results indicated above are based on the tests carried out on the samples received in the laboratory.

⇒Any Query regarding the report must be reported within 30 days from the date of testing.

A.E.E.

****

Civil-tech Consultants & Engineers
#23/14, 7th Cross, 3rd Stage, 4th Block,
Shakthi Ganapathinagar,
Basaveshwaranagar, Bangalore-560 079.

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/W.No.08/BBU/BC/Sp_Wa/2016-17 29.12.2016

TEST REEPORT ON SPECIFIC GRAVITY AND WATER ABSORPTION

* Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. B.B. Umesh,** #385, Bettahalasur (P), Bangalore North Taluk.
* Name of Work	:	Patching potholes in main and cross roads of Kodigehalli Tatanagara Bhadrappa Layout, Devinagara, Lottegollahalli, Muneshwaranagara and surrounding areas in Ward No.08, BBMP, Bangalore.
* Reference	:	BBMP/EE/BTP/WO/ /2016-17
* Sample ID	:	Hot mix plant, Bangalore
Technical Reference	:	IS: 2386 (Part 3) 1963 (RA-2016)
* Type of Mix	:	Bituminous Concrete
Date of Testing	:	29.12.2016

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	1996	1995	1997	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1239	1238	1242	
4	Weight of saturated surface dry aggregate in air	W_3 g	2015	2016	2017	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	776	778	775	
6	Weight of oven dried aggregate	W_4 g	2000	2002	2003	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.577	2.573	2.585	2.578
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.628	2.620	2.632	2.627
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.75%	0.70%	0.70%	0.72%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%

Note:

⇒The report shall not be reproduced, except in full, without the written approval of the laboratory.

⇒The results indicated above are based on the tests carried out on the samples received in the laboratory.

⇒Any Query regarding the report must be reported within 30 days from the date of testing.

Civil-tech Consultants & Engineers

A.E.E.

#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagar, Bangalore-79.

Tele Fax : 23223227, Website : www.civiltechconsultants.com

E-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No: CTCE/BBMP/W.No.08/BBU/BC/Bitumen/2016-17 29.12.2016

TEST REPORT ON BITUMEN CONTENT OF BITUMINOUS CONCRETE MIX

* Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. B.B. Umesh,** #385, Bettahalasur (P), Bangalore North Taluk.
* Name of Work	:	Patching potholes in main and cross roads of Kodigehalli Tatanagara Bhadrappa Layout, Devinagara, Lottegollahalli, Muneshwaranagara and surrounding areas in Ward No.08, BBMP, Bangalore.
* Reference	:	BBMP/EE/BTP/WO/ /2016-17
* Sample ID	:	Roads in Muneshwaranagara and surrounding areas in Ward No.08, BBMP, Bangalore.
Technical Reference	:	IRC:SP:11-1984
Date of Testing	:	29.12.2016

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	469	470
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	31	30.00
7. Bitumen content in %	6.20	6.00
8. Average	**6.10**	

*Information is furnished by the Customer/Representative.

Civil-Tech Consultants & Engineers Bangalore

Note:

⇒The report shall not be reproduced, except in full, without the written approval of the laboratory.

⇒The results indicated above are based on the tests carried out on the samples received in the laboratory.

⇒Any Query regarding the report must be reported within 30 days from the date of testing.

A/c W8

A.E.E.

****

Civil-tech Consultants & Engineers
#23/14, 7th Cross, 3rd Stage, 4th Block,
Shakthi Ganapathinagar,
Basaveshwaranagar, Bangalore-560 079.

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No: CTCE/BBMP/W.No.08/BBU/BC/Bitumen/2016-17 29.12.2016

TEST REPORT ON BITUMEN CONTENT AFTER GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

* Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. B.B. Umesh,** #385, Bettahalasur (P), Bangalore North Taluk.
* Name of Work	:	Patching potholes in main and cross roads of Kodigehalli Tatanagara Bhadrappa Layout, Devinagara, Lottegollahalli, Muneshwaranagara and surrounding areas in Ward No.08, BBMP, Bangalore.
* Reference	:	BBMP/EE/BTP/WO/ /2016-17
* Sample ID	:	Roads in Muneshwaranagara and surrounding areas in Ward No.08, BBMP,
Technical Reference	:	IS 2386 and IRC:SP:11-1984
Date of Testing	:	29.12.2016

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-18 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	36.35	7.75	7.75	92.25	79-100
9.5	36.69	7.82	15.57	84.43	70-88
4.75	69.32	14.78	30.35	69.65	53-71
2.36	68.25	14.55	44.91	55.09	42-58
1.18	51.28	10.93	55.84	44.16	34-48
0.6	56.36	12.02	67.86	32.14	26-38
0.3	43.36	9.25	77.10	22.90	18-28
0.15	36.33	7.75	84.85	15.15	12-20
0.075	39.15	8.35	93.20	6.80	4-10

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-18 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	33.16	7.06	7.06	92.94	79-100
9.5	44.25	9.41	16.47	83.53	70-88
4.75	65.36	13.91	30.38	69.62	53-71
2.36	69.69	14.83	45.20	54.80	42-58
1.18	62.12	13.22	58.42	41.58	34-48
0.6	56.36	11.99	70.41	29.59	26-38
0.3	35.15	7.48	77.89	22.11	18-28
0.15	30.22	6.43	84.32	15.68	12-20
0.075	37.15	7.90	92.23	7.77	4-10

*Information is furnished by the Customer/Representative.

Note:

⇒The report shall not be reproduced, except in full, without the written approval of the laboratory.

⇒The results indicated above are based on the tests carried out on the samples received in the laboratory.

⇒Any Query regarding the report must be reported within 30 days from the date of testing.

****

Civil-tech Consultants & Engineers
#23/14, 7th Cross, 3rd Stage, 4th Block,
Shakthi Ganapathinagar,
Basaveshwaranagar, Bangalore-560 079.

#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagar, Bangalore-79.

Tele Fax : 23223227, Website : www.civiltechconsultants.com

E-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com